

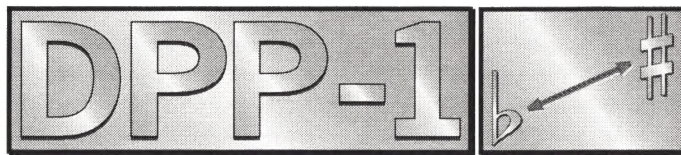
# DPP-1<sup>TM</sup>

**PITCH PROCESSOR USER'S GUIDE**

**DSP PLUG-IN FOR  
PRO TOOLS III<sup>TM</sup>/TDM SYSTEMS**

**digidesign<sup>®</sup>**





# USER'S GUIDE

Version 1.0

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In fond memory of those who perished in "The" war.

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Digidesign is serious about customer support, and is strongly committed to a continuing relationship with you after your purchase. As a registered DPP-1 owner, you can contact Digidesign directly with any questions or problems. A DPP-1 Technical Support person will be standing by to help you during business hours.

For the best service, please have the following information ready before calling:

1. Apple System software version
2. Digidesign software and version
3. Digidesign hardware configuration
4. Hard disk model and mechanism

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### **Digidesign US (English speaking)**

Phone: 415-688-0744

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Hours: Monday through Friday — 9:00am - 5:30pm PST

### **Digidesign Germany/Benelux (English, Dutch, and German speaking)**

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Digidesign is made up of people who are very interested in audio and the recording process as a whole. Become one of our registered owners and participate in the creative process.

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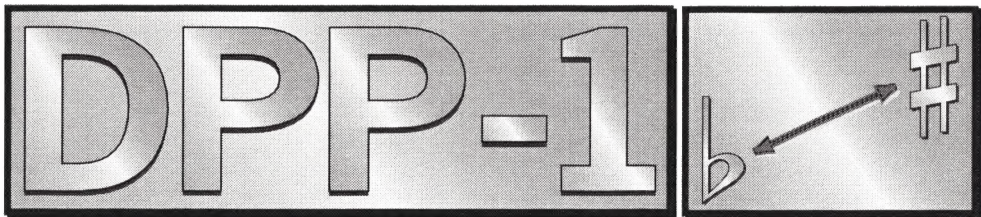
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# **Chapter A**

## **An Introduction to the DPP-1 Pitch Processor**





# An Introduction to the DPP-1 Pitch Processor

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## Introduction

Congratulations on your purchase of the DPP-1 Pitch Processor™ software. DPP-1 is DSP Plug-In software that adds high-quality pitch transposition and delay processing capabilities to your Digidesign Pro Tools III or Pro Tools I-series system equipped with TDM.

### **Your DPP-1 package contains the following components:**

- DPP-1 Installation disk
- DPP-1 User's Guide
- DPP-1 Registration card

If your package is missing any of these items, please contact your Digidesign dealer.

---

## System Requirements

In order to use DPP-1 you will need:

- A Digidesign Pro Tools III system or Pro Tools I-series system equipped with TDM.
  - A NuBus-equipped 68040-based Macintosh computer, or a NuBus-equipped Power Macintosh 7100 or 8100 computer.
  - At least 16 megabytes of RAM. Additional RAM is recommended if you plan to use a MIDI sequencer concurrently with Pro Tools. You cannot use the Virtual Memory capability of the Macintosh with Pro Tools.
-

- Apple's System software version 7.1 or later, running in 32-bit mode.
- A 12-inch or larger color or greyscale monitor. (A 16-inch or larger monitor is highly recommended.)
- One or more hard drives for recording audio. For Pro Tools III systems, drives must be SCSI drives connected to the Disk I/O card and have a sustained transfer rate of 2.5 megabytes per second or faster. For Pro Tools I-series systems, drives must have an average access time of 18 ms or faster, and a sustained transfer rate of 800 Kilobytes per second or faster.

When choosing a hard drive to use for recording, consult your dealer or Digidesign. Manufacturers are not always the best source for information about the speed of their drives. Digidesign has encountered many instances where actual hard drive access and throughput speeds varied considerably from what manufacturers advertise.

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## About Your User's Guide

Your *DPP-1 User's Guide* explains how to install and use the DPP-1 software. It covers features and functions of DPP-1 and suggestions for how to use it in Pro Tools sessions. Your DPP-1 User's Guide is meant to be used as a supplement to your Pro Tools User's Guide.

### If You Are a New Pro Tools User

If you are just learning Pro Tools, please read your *Pro Tools User's Guide* to learn how to install and use the Pro Tools/TDM hardware and software. Once you have a good basic understanding of Pro Tools, refer to your *DPP-1 User's Guide* to learn how to use DPP-1 with your system.

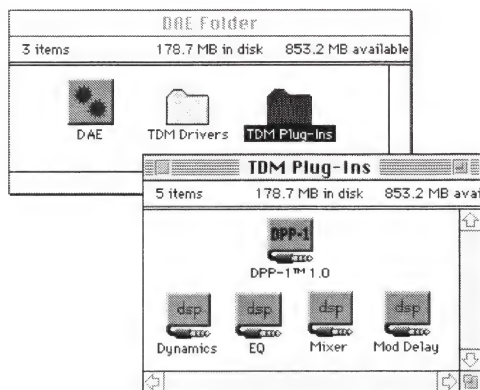
### If You Are an Experienced Pro Tools User

If you are an experienced Pro Tools user, read this manual to learn about the enhancements DPP-1 brings to your Pro Tools system and how to use the DPP-1 software.

Before using DPP-1 and your Pro Tools system, you should have a working knowledge of the Macintosh and its operating conventions. These include how to use a mouse; how to open, close, and save files; and how to use standard Macintosh menus and commands. If you are unfamiliar with how to perform any of these tasks, please spend some time learning your Macintosh before going any further.

## Installing DPP-1

When you use the DPP-1 Installer to copy the DPP-1 Plug-In to your hard drive, the Installer automatically places it in the TDM Plug-Ins folder within the DAE Folder inside your System Folder. Once installed, its high-quality 24-bit pitch transposition processing can be applied to any audio signals within a Pro Tools session—including external gear that is routed into the Pro Tools TDM mixing environment.



*The TDM Plug-Ins Folder*

Because DPP-1 is copy protected, the DPP-1 Installer disk permits *two* installations, referred to as hard disk “authorizations” of the DPP-1 Plug-In. The Installer disk also contains an application called the *DPP-1 Deauthorizer*, which permits you to reclaim the authorizations if necessary by removing them from your hard disk.

If you have used up both of your authorizations, but need to use the DPP-1 Plug-In, you can install the DPP-1 software on a hard drive and simply insert the Master Installer disk when you run DPP-1/Pro Tools to “temporarily” authorize the hard drive.

### IMPORTANT

If you periodically use hard disk defragmentation software to tune up the performance of your hard drive (as you should), you will be glad to know that you can safely do so without damaging DPP-1’s copy protection. In other words, it is not necessary to remove DPP-1 by reclaiming an authorization before you defragment your drive. However, should you wish to *initialize* or *reformat* your hard drive, you *must reclaim DPP-1’s authorization* or it will be erased when you initialize or reformat your hard disk!

### Send in Your DPP-1 Registration Card to Receive Backup Installer Disks

When you send in the DPP-1 Registration Card, Digidesign Customer Services will mail you a second set of Installer disks. This way you'll be protected in case you lose your original set of disks, or if they become damaged in some way. As a registered user you'll also receive periodic software updates and notification of upgrades. Don't delay. Send in your Registration Card today.

### To Install the DPP-1 software on your computer:

- Insert the *DPP-1 Install* disk into your Mac.
- Double-click the *DPP-1 Installer* application. When the program opens, click *OK* to continue.
- In the Installer dialog box, click *Install*.
- The Installer will ask you to select the drive on which you'd like to install the DPP-1 software. Select the same drive on which you installed the Pro Tools application. (Your *Startup* drive.)
- Follow the on-screen instructions to complete the installation. The Installer will take you through the installation procedure and install the *DPP-1* software in the *DAE Folder* within your System Folder.
- When the installation procedure is finished, the Installer will let you restart your computer.

Your DPP-1 installation is now complete. All that remains is for you to “authorize” your software. The following section provides instructions for this.

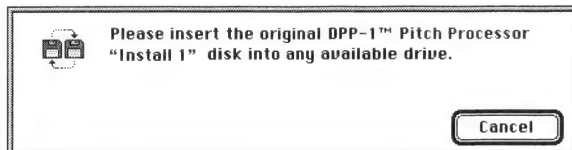
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## Authorizing Your Copy of DPP-1

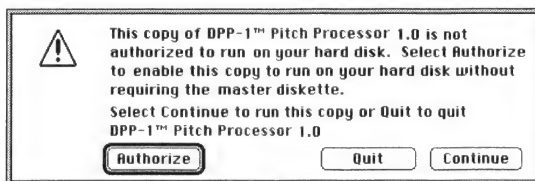
Because the DPP-1 Plug-In is copy protected, the first time that you open Pro Tools after installing DPP-1 you must “authorize” your hard disk to run it. To do this, you will simply insert the master DPP-1 Installer disk and select the hard disk where DPP-1 is installed. The Installer allows you to authorize a maximum of two hard disks on which you can run DPP-1. If you wish to run DPP-1 on other hard disks, you can simply authorize the other hard disks. Before you do this, you may wish to “reclaim” one of the authorizations that you already used. To deauthorize DPP-1, simply run the DPP-1 Deauthorizer and “deauthorize” the hard disk.

## To authorize your copy of DPP-1:

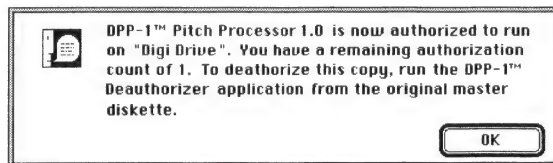
- Make sure that your Pro Tools Audio Interface(s) and external hard drive(s) are powered on.
- Double-click Pro Tools to open it. The following dialog appears, prompting you to authorize DPP-1:



- Make sure that the *Install 1* disk is write enabled, and then insert it in your floppy drive. This dialog appears:



- Click *Authorize*. The Installer authorizes your hard disk.
- When authorization is finished, a dialog appears confirming that your hard disk is now authorized to run DPP-1, and tells you how many more authorizations your disk has left (in the example below, the disk has a remaining authorization count of 1).



- Click *OK*. You can now use the DPP-1 on your hard drive.

This completes the installation and authorization of DPP-1. From now on, when you start Pro Tools you should not have to insert your master DPP-1 disk.

*NOTE: Do not lose or alter your DPP-1 master disk! You will not be able to complete an installation without it. Store the disk in a safe place when not in use. And don't forget to send in your DPP-1 registration card so that Digidesign can send you a backup disk and DPP-1 software updates!*

---

## Deauthorizing DPP-1

To deauthorize DPP-1, you must use the *Deauthorizer* application included on your *DPP-1 Installer* disk.

### To deauthorize DPP-1:

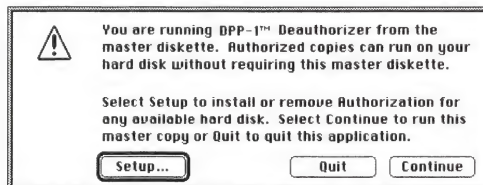
- Insert the *DPP-1 Install* disk into any floppy drive. Make sure that the hard disk that you want to deauthorize is connected to your Macintosh and visible on the Desktop.
- Double-click on the *DPP-1 Deauthorizer* icon on the *DPP-1 Install* disk to launch the Deauthorizer application.



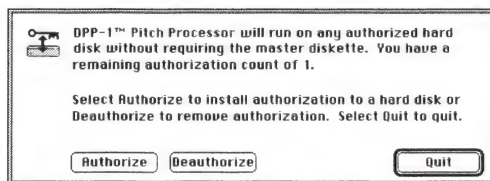
DPP-1™ Deauthorizer

*The DPP-1 Deauthorizer application*

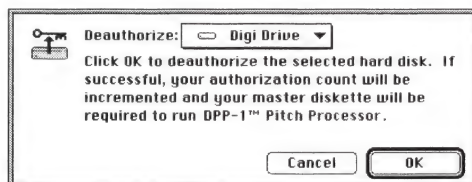
- The following dialog appears:



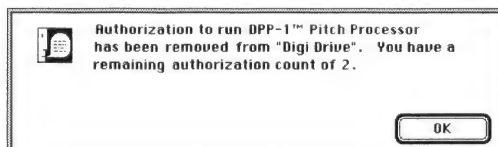
- Click on *Setup*. This dialog box appears:



- Click *Deauthorize*. The following dialog appears:



- Make sure the appropriate hard disk is selected (use the pop-up menu to select a different disk, if necessary) and click *OK*.
- A status dialog will appear briefly while deauthorization takes place. After this, a dialog appears confirming that you have replaced one authorization.



- Click *OK*. When the next dialog box appears (the "Authorize/Deauthorize" dialog), click *Quit* to return to the Finder.

Deauthorization is now complete.

---

## What is the DPP-1 Pitch Processor?

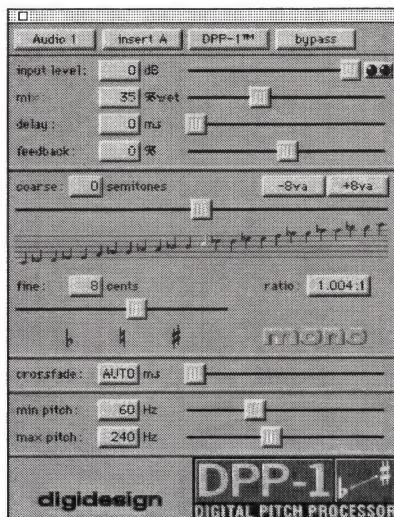
DPP-1 is a software-based Plug-In for the Pro Tools/TDM mixing environment. It supplies up to 4 octaves of high-quality, 24-bit stereo chromatic, equal-temperament pitch transposition and manipulation to Pro Tools by utilizing the digital signal processing power of your system's DSP Farm card.

DPP-1's pitch processing capabilities have a wide range of applications including:

- General broadening and thickening of audio in a mix through chorusing, doubling, and delay
- Pitch correction of musical material
- Special effects such as extreme pitch transposition of voices or sound effects

As a TDM Plug-In, the DPP-1 software provides several significant advantages over traditional hardware-based signal processing devices:

- The ability to run multiple pitch processors simultaneously without having to buy individual outboard devices for each.
- Fast and convenient on-screen editing.
- 24-bit resolution for high-quality, low-noise processing that stays within the digital domain.
- A convenient, totally recallable patching and routing environment.



The DPP-1 window as it appears within Pro Tools

## DPP-1 Features

DPP-1 provides up to 4 octaves of high-quality, stereo pitch processing with up to 125 milliseconds of delay per channel. DPP-1 can function in either mono or stereo. All of DPP-1's controls are accessed from within the Pro Tools software. All routing and bussing functions are accessible through on-screen pop-up menus. This means less time-consuming patching of external devices as well as complete digital audio integrity, with full internal digital mixing, routing, and level & pan automation.

DPP-1 functions like its conventional outboard pitch processor counterpart—with the added benefit of processing signals entirely in the digital domain. In addition, DPP-1 operates in real time and is *non-destructive*, meaning that it does not alter your audio source material, but merely processes audio during real time input or playback. However, if you wish to *permanently* apply DPP-1 to an input or disk track, you can do this too, by recording the processed effect to disk. (This technique is covered in the *Mixing* chapter of your Pro Tools User's Guide). This allows you to make efficient use of limited DSP resources if necessary.

## Using DSP Plug-Ins In Series

Your Pro Tools system allows you to insert up to 5 Plug-Ins such as DPP-1 in-line on an audio track or auxiliary return (if you have enough DSP power). When more than one Insert is used on an input track, audio is processed in series, with each effect being added to the previous one, from first to last. For this reason, efficient placement of Inserts is important in order to maximize their effect. For example, you may wish to apply a Gate last, in order to reduce potential noise from any analog devices in the signal chain. Because the Pro Tools TDM software mixer can grow in a dynamic fashion, allowing you to decide how much DSP power you wish to allocate and where you wish to use it, you can utilize multiple DPP-1s in a Session, according to how much DSP power you have available.

## Avoiding Clipping

In addition, Pro Tools' Inserts are *pre-fader*, so you can accidentally cause clipping if you boost signal processing gain on an Insert to extremes. This is particularly true when processing high amplitude signals. Be sure to listen to your audio source material carefully to avoid clipping when processing.

---

## What is a DSP Plug-In?

Plug-Ins are software “modules” that use the power of your DSP Farm(s) to add new capabilities to your Pro Tools system. With TDM's 256-channel, 24 bit virtual digital mixing and Plug-In environment, powerful new signal processing capabilities can be added to your system at any time by simply purchasing any of the DSP Plug-In software products available from Digidesign or its Development Partners.

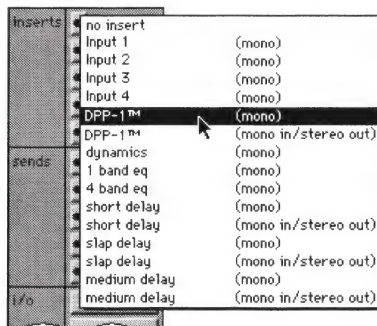
Because these products are software-based, you do not pay for the costs inherent in developing a stand-alone hardware effects unit—there's no box, no power supply and no circuit boards. DSP Plug-Ins supply this same functionality *within* the TDM environment. This also allows for extremely flexible mixing and routing of both internal digital audio signals *and* external processing devices. The TDM environment supplies the potential for all of the devices in your studio—both analog and digital—to be connected together into an integrated digital system, at an affordable price.

## How Much DSP Does DPP-1 Require?

Each DPP-1 requires one full DSP chip (out of the four on a DSP Farm card). As you may recall from reading your *Pro Tools User's Guide*, the number of DSP Plug-Ins you can use at one time in a Session depends on how much DSP power is available in your system. Since the signal processing power of your DSP Farm is required for both mixing functions *and* Plug-In signal processing functions, if you are using an on-screen mixer with many inputs, you may not have enough DSP power left to use several Plug-Ins. (Refer to your *Pro Tools User's Guide* for guidelines on DSP allocation.) If you find that you don't have enough DSP to use as many individual DPP-1s as you wish, you can add more DSP to your system by installing additional DSP Farm cards (providing you have unused Nubus slots in your Macintosh, or own a Digidesign Expansion Chassis).

## Mono or Stereo Operation

You can use DPP-1 in three different modes: mono in/out; mono in/stereo out; or stereo in/out. If you apply DPP-1's mono-in/stereo-out mode to a mono track, the output of the track will be "stereoized." A track stereoized in this way then has two pan faders for controlling each channel of the stereo signal. If DPP-1 is placed *after* a stereo Insert on a track, it will automatically use the *stereo out* mode as well.



You can select either mono in/mono out or mono in/stereo out versions of DPP-1 from the Inserts pop-up.

---

## Troubleshooting

If you're having trouble getting your Pro Tools system or DPP-1 to work properly, the following checklist may help you solve the problem.

### **If the Pro Tools software won't start:**

- Is your Audio Interface turned on?
- Is your Macintosh running in 32-bit mode? If not, open the Control Panels folder (in your System Folder), double-click the item called *Memory*, and set it to 32-bit mode. Then restart your computer.
- Is DAE installed in the *DAE Folder* inside your System Folder? If not, use your Pro Tools Installer disks to install it.
- Is the DigiSystem INIT installed in the Extensions folder (inside your System Folder)? If not, use your Pro Tools Installer disks to install it.
- Does your Macintosh have enough RAM (random-access memory)? Digidesign recommends that you have at least 12 megabytes of RAM in your Mac in order to use Pro Tools. To find out how much memory your computer has, choose *About this Macintosh* in the Finder's Apple menu. A window will appear telling you how much memory is currently installed in your Mac.
- Is Virtual Memory turned off? If not, open the Control Panels folder (in your System Folder), double-click the item called *Memory*, and turn off Virtual Memory. Then restart your computer.

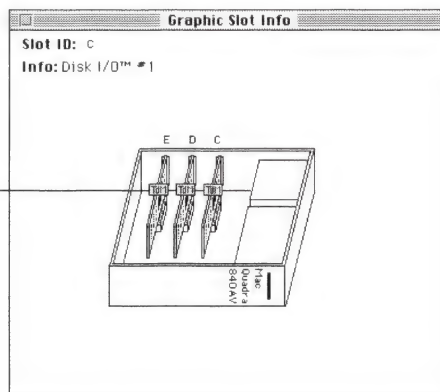
### **If you get an error message when you try to start the Pro Tools software:**

- Try a complete restart (turn off all Audio Interfaces, computer peripherals and your Macintosh CPU, and then turn them on again).
- If you still get an error message, you can use the *Expansion View* application (included on your Pro Tools Installation disks) as a diagnostic tool to verify that the TDM module(s) attached to your Pro Tools Disk I/O or Audio Card(s) are operational. (Expansion View is useful as a diagnostic tool for this purpose even if you are not using a Digidesign Expansion Chassis.)

## To use the Expansion View application as a diagnostic tool:

- Start the *Expansion View* application.
- From the *Expansion Chassis* menu, choose *Graphic Slot Information*. A window appears depicting your CPU (and an Expansion Chassis if one is connected to your system). This shows which Digidesign cards are installed in your system.

This presence of the “TDM” graphic here indicates that a proper TDM Bus connection has been made.



- All Disk I/O or Audio Cards and DSP Farms shown in this window should appear with a small box labeled “TDM” on them.
- If the “TDM” graphic is missing on any of the cards, this indicates that communication has not been established between the TDM module on the card and the TDM Bus. If this is the case, power down your system and reseal the cards and ribbon cable connections. (*Remember to discharge any residual static charge that may be on your body by touching a grounded metal surface such as the power supply in your computer’s CPU.*)

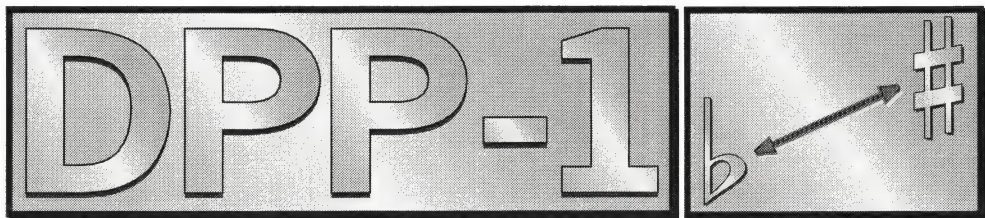
## If All Else Fails...

If you’ve tried everything and still can’t get your Pro Tools system to work, don’t panic. Call Digidesign at (415) 688-0744 and ask for Pro Tools Technical Support. The Digidesign Technical Support Team will do everything they can to help you get up and running.



# **Chapter B**

## **Using the DPP-1 Pitch Processor**





# Using The DPP-1 Pitch Processor

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## Introduction

The DPP-1 Pitch Processor is designed to be simple and intuitive to use. This chapter explains each of the controls found in the DPP-1 window and how to use them. It also offers suggestions on how to use DPP-1 in a typical Pro Tools session.

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## A Few Words About Pitch Processing

Digital pitch processing is an important component of modern audio production. It has a wide range of useful applications, including tuning correction of musical material, general thickening of specific audio elements in a mix (typically broadening the element's presence in the stereo field), and special effects applications involving extreme pitch transposition of audio material.

Digital pitch processing such as that provided by DPP-1 differs significantly from the technique of simply varying sample playback rate to achieve pitch transposition. Merely changing sample playback rate will result in the digital equivalent of “vari-speeding” with tape, and will change the overall length of the audio material. Pitch transposition with processors such as DPP-1 however, involves a much more complex technique: digitally adding or subtracting of portions of the audio waveform itself, while using de-glitching crossfades to minimize artifacts. The result is a processed signal that is transposed in pitch, but still retains the same overall length as the unprocessed signal.

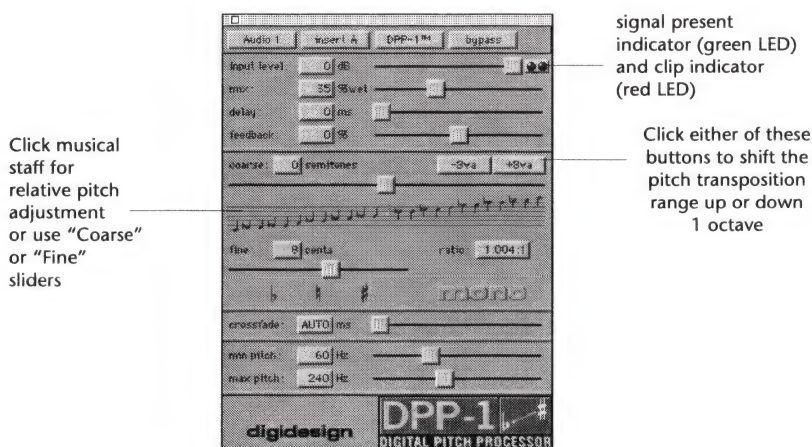
Processed audio can be melded with unprocessed audio, with the end result being an adjustable mix of the original “dry” source and the processed “wet” signal. Experimentation and creative use of DPP-1 will allow you to apply many exciting and evocative effects to your mixes in the Pro Tools/TDM environment. The following section of your User's Guide explains each of DPP-1's parameters and their use.

---

---

## DPP-1 Pitch Processor Controls

The DPP-1 Pitch Processor provides you with the parameters that you would typically find on a professional-quality pitch processing unit. Each of the parameters and its use is explained below. As with most Pro Tools DSP Plug-Ins, you can make finer adjustments to parameter sliders by holding down the Command key before beginning to drag a slider. Option-clicking on a control resets it to its default value.



*The DPP-1 window as it appears in Pro Tools*

### Input Level

This control allows you to attenuate (reduce) the input volume of DPP-1 to help prevent the possibility of internal clipping. This control slider ranges from 0 (no attenuation) downwards to full off (infinity). Because Pro Tools' Inserts are pre-fader, clipping can occur if gain is boosted too high on processors which are used on inserts. This type of clipping can't be rectified by adjusting the Input Level attenuator—this control affects only internal pitch processing levels.

### Signal Present Indicator (green LED)

This meter indicates the presence of an input signal.

### Clip Indicator (red LED)

This indicator shows if clipping has occurred. It is a “clip hold” indicator, meaning that if clipping occurs at any time, the Clip light will remain on. To clear the clip indicator, click it with the mouse. With longer delay times and greater feedback settings, there is a greater likelihood of clipping as the feedback element builds up and approaches a high output level. Be careful to monitor your send or Insert signal levels closely to help prevent this from happening. It is important to note that the Clip Indicator is based on the *output* level of DPP-1—not the input level. It is possible for a signal to actually clip *on input*—before it reaches DPP-1. In this case, DPP-1 has no way of indicating or controlling clipping that may have occurred in the signal chain *prior* to its input, such as in a Send Buss. When mixing and using the DPP-1 in a standard send/return arrangement you can use a Master Fader assigned to your Send Buss to monitor input signal levels to watch for clipping.

### Mix

This control allows you to adjust the ratio of dry signal to effected signal in the output. In general, this control should be set to 100% wet, unless you are using DPP-1 “in-line” on an Insert for an individual track or element in a mix. This control can be adjusted over its entire range with little or no change in output level.

### Delay

This slider allows you to set the delay time between the original signal and the pitch-shifted signal. It has a maximum setting of 125 milliseconds. You can use the delay slider in conjunction with the *Feedback* control to generate a single pitch-shifted echo or a series of them which “climb” in pitch.

### Feedback

This slider allows you to control the amount and type (positive or negative) of feedback applied from the output of the delay portion of DPP-1 back into its input. It also controls the number of repetitions of the delayed signal. It allows for effects which “spiral” up or down in pitch, with each successive echo shifted in pitch.

### Coarse

This slider allows you to adjust the pitch of a signal in semitones over a two octave range. Pitch changes are indicated both in the *semitones* numeric readout box and in the graphical *Musical Staff Relative Pitch Entry* section below this slider. Using the -8va and +8va buttons in conjunction with this slider provides a full 4 octave range of adjustment.

### -8va and +8va Buttons

Clicking the -8va button adjusts pitch down one octave from the current setting of the coarse and fine pitch controls. Clicking the +8va button adjusts pitch up one octave from the current setting of the coarse and fine pitch controls.

## Relative Pitch Entry (Musical Staff)

Clicking on any note on this ascending musical staff allows you to quickly select a relative pitch transposition value that will be applied to an audio signal. If Middle C is illuminated in a blue-green color, it indicates that no pitch transposition has been selected. If a pitch transposition is selected, the “note” corresponding to the selected transposition value is indicated in yellow. Option-clicking on the staff will set the coarse pitch change value to zero.

## Fine

This slider allows you to adjust the pitch of a signal in cents (hundredths of a semitone) over a 100 cent range. The range of this slider is -49 to +50 cents. Precise Pitch change values are indicated in the *Cents* numeric readout box. The flat (b), natural (♮), and sharp (♯) signs below this slider indicate deviation from the nearest semitone. Option-clicking on the *Fine* Slider or the natural sign (♮) will set the *Fine* slider back to its default value of zero.

## Ratio

This indicator shows the ratio of transposition between the original pitch and the selected transposition value.

## Crossfade

This slider allows you to manually adjust the crossfade length in milliseconds to optimize performance of DPP-1 according to the type of audio material you are performing pitch processing on. As you may recall from the explanation in the beginning of this chapter, pitch processors such as DPP-1’s achieve pitch transposition by replicating or subtracting portions of audio material and very quickly crossfading between these alterations in the waveform of the audio material. Crossfade length essentially affects the amount of “smoothing” performed on audio material to prevent audio artifacts such as clicks as the audio is looped to generate the desired pitch shift. In general, small narrow-range pitch shifts require longer crossfades and large shifts require smaller ones. The disadvantage to long crossfade times is that they smooth the signal, including any transients. While this is often desirable for audio material such as vocals, it is not appropriate for material with sharp transients such as drums or percussion.

The default setting for this parameter is *Auto* (full left), in which crossfade times are set automatically, according to the settings of the *Coarse* and *Fine* pitch controls. This setting should be sufficient for most applications. However, by using this slider, you can manually adjust and optimize crossfade times if necessary. For audio material with sharper attack transients, use smaller crossfade times. For audio material with softer attack transients, use longer crossfade times.

### Minimum Pitch

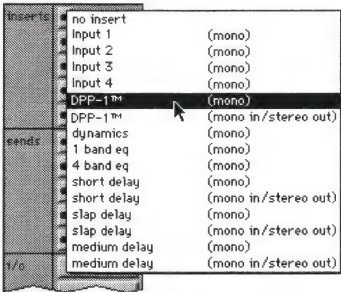
This slider allows you to set the minimum fundamental pitch that DPP-1 will recognize when performing pitch transposition. This allows you to optimize DPP-1's performance by adjusting this parameter based on the lowest fundamental pitch of the audio material that you wish to process. On audio material with a low fundamental pitch frequency content (such as an electric bass guitar) setting this control to a lower frequency (such as 30 Hz) will improve DPP-1's performance. The most important thing to remember when using this control is that the fundamental frequency of audio material you wish to process must be *above* the frequency you set here. This slider has an adjustment range of 15 Hz to 1000 Hz. The default setting is 60 Hz. Movement of this slider is tied to the Maximum Pitch slider so that the Minimum/Maximum range is never less than one octave and never more than five octaves.

### Maximum Pitch

This slider allows you to adjust the maximum fundamental pitch that DPP-1 will recognize when performing pitch transposition. This allows you to optimize DPP-1's performance by adjusting this parameter (and the *Minimum Pitch* parameter) based on the highest fundamental pitch of the audio material that you wish to process. This slider has an adjustment range of 30 Hz to 4000 Hz. The default setting is 240 Hz.

## Accessing DPP-1

To use DPP-1, you must access it by clicking the *Inserts* button on a Pro Tools track and selecting it from the pop-up menu that appears.



Selecting DPP-1 and using it "in-line" as an Insert on a standard audio track

- As an individual “In-line” pitch processor on an individual audio track or auxiliary input track, by selecting it from the *Inserts* pop-up menu on that track. (This usage is best for pitch transposition on *individual* signal sources.)
- Or, as a “shared resource” on an Auxiliary Input (a return) track which is carrying the bussed, mixed signals from several tracks. In this case, DPP-1 is still used on an Insert, but is applied to the mixed signals of several inputs at once. This technique is particularly useful since it allows both efficient use of DSP power and a way to apply varying amount of processing to multiple inputs. (This usage is best for performing chorusing or thickening of input signals) individual signal sources.)

Controls overall Send level to  
DPP-1, providing Master  
metering and input clip  
indication

Audio track 2

Functions as stereo return for mono  
in/stereo out DPP-1

Audio track 1

Send to DPP-1 with  
individually  
pre-/post-fader  
switching and level  
control

DPP-1 Send

PCM170 In

Bus 2

DPP-1 Send

input level: 0 dB

mix: 35 %wet

delay: 0 ms

feedback: 0 %

coarse: 0 semitones

fine: +11 cents

ratio: 1.004:1

crossfade: AUTO ms

min pitch: 60 Hz

max pitch: 240 Hz

input level: 0 dB

mix: 35 %wet

delay: 0 ms

feedback: 0 %

coarse: 0 semitones

fine: -11 cents

ratio: 1.004:1

crossfade: AUTO ms

min pitch: 60 Hz

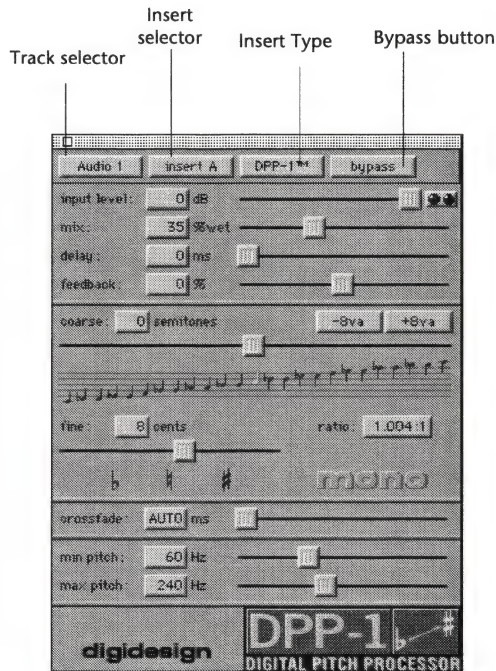
max pitch: 240 Hz

digidesign

DPP-1

DIGITAL PITCH PROCESSOR

## The DPP-1 Pitch Processor User's Guide



The DPP-1 Editor window

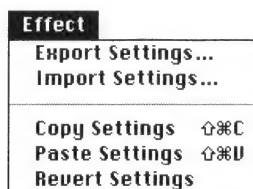
### To access and use DPP-1:

- If the Inserts are not currently visible on your tracks, choose the *Show Inserts View* and *Show Extra Views in Mix Window* commands from Pro Tools' Display menu.
- Click the *Inserts* pop-up menu and select DPP-1 (you can choose either *mono* or *stereo* output, depending on your needs). When you do this, the DPP-1 Inserts/Send Editor window will appear. This floating window allows you to conveniently access and edit Inserts and Sends for any audio track.
- Click *Play* on the Transport to begin audio playback.
- Adjust the parameters of DPP-1 to achieve the pitch processing effect you desire. For more specific suggestions on useful DPP-1 settings, see the section that follows, entitled "*Customizing DPP-1 Effects.*"

---

## Copying, Pasting, Importing and Exporting Plug-In Parameters

You can conveniently copy, paste, import, and export DPP-1 parameters using the commands found in Pro Tools' *Effect* menu. By doing so, you can create your own library of commonly used DPP-1 and other Plug-Ins settings that you can easily use on any track in any Session.



*The Effect menu*

### Export Settings

The *Export Settings* command allows you to save the current DPP-1 settings (or any currently active Plug-In's settings) in the Inserts/Sends Editor as a parameter file on disk. You can then "import" and apply these settings to a different track or Session by calling up a track in the Inserts/Sends Editor and choosing the *Import Settings* command. This saves you the time and trouble of adjusting the parameters manually.

### Import Settings

The *Import Settings* command allows you to load and use a previously saved DPP-1 (or other Plug-In) parameter settings file. When the settings are loaded, they are applied to the currently active Plug-In in the Inserts Editor. The Inserts/Sends Editor window must be open for this command to be available in the Effect menu.

### Copy Effect Parameters

The *Copy Effect Parameters* command allows you to copy the current DPP-1 settings (or the settings of any currently active Plug-In). You can then apply these settings to a different track by calling up the track in the Inserts Editor and pasting them with the *Paste Effect Parameters* command. This saves you the time and trouble of adjusting the parameters manually. Effect parameters can be copied and pasted during playback. To apply the Plug-In's parameters to a track in another Session, use the *Export Settings* and *Import Settings* commands, explained above.

### Paste Effect Parameters

The *Paste Effect Parameters* command allows you to paste effects parameters copied in the Inserts/Sends Editor with the *Copy Effect Parameters* command. Effect parameters can actually be copied and pasted during playback. To apply a Plug-In's parameters to a track in another Session, use the *Export Settings* and *Import Settings* commands, explained above.

### Revert Settings

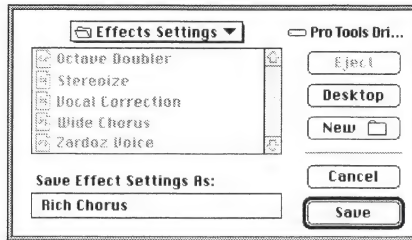
The *Revert Settings* command restores the selected Plug-In's settings to the state they were in the last time you saved your Session. The Inserts/Sends Editor window must be open for this command to be available in the Effect menu.

### To copy DPP-1 parameters from one Insert and paste them into another:

- Make sure the Inserts/Sends Editor is open and that the parameters for DPP-1 are displayed.
- From the Edit menu, choose *Copy Effect Parameters*. Pro Tools copies the current settings of DPP-1 in the Inserts Editor.
- In the Inserts Editor, click the *Track Selector* pop-up and choose the track that you wish to paste the DPP-1 parameters into.
- When the desired track appears in the Inserts Editor, click the *Insert Selector* pop-up and choose *Insert A, B, C, D, or E* from the pop-up menu depending on which of these you wish to paste the parameters into.
- Choose *Paste Effect Parameters* from the Edit menu. Pro Tools pastes the previously copied effect parameters.

### To save the parameters of DPP-1 (or any currently active Plug-In) to disk:

- Make sure the Inserts/Sends Editor is open and that the parameters for DPP-1 are displayed.
- From the Edit menu, choose *Export Settings*. This dialog appears:

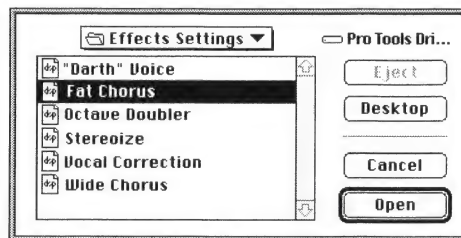


*The Export Settings dialog*

- In the dialog, enter a name for the settings file.
- Click OK. Pro Tools saves the DPP-1's current settings to disk.

### **To load and use a saved DPP-1 settings file:**

- Make sure the Inserts/Sends Editor is open.
- In the Inserts Editor, click the *Track Selector* pop-up and choose the track that you wish to import the DPP-1 parameters into.
- When the desired track appears in the Inserts Editor, click the *Insert Selector* pop-up and choose *Insert A, B, C, D, or E* from the pop-up menu depending on which of these you wish to import the parameters into.
- From the Edit menu, choose *Import Settings*. This dialog appears:



*The Import Settings dialog*

- In this file dialog locate the desired settings file and click *Open*. Pro Tools loads the previously saved effect parameters into the Effects/Sends Editor where they are applied to the currently selected track.

---

## Using the Effect Templates Included with DPP-1

Your DPP-1 disk includes several templates for useful pitch processing effects. Take a few moments to try these templates out by using the *Import Settings* command, explained in the previous section. Each of the Templates is configured for stereo usage. However, you can use any of these in mono, as well. Doing so will simply utilize the settings of the left channel of the Template.

Keep in mind that it is very easy to make your own library of presets simply by finding an effect that you like, and using the *Export Settings* command to save the settings as a file on disk. Once you have saved a settings file, you can reuse it at any time by loading it with the *Import Settings* command.

### The templates provided with your DPP-1 disk include:

- *Thickening (±11 cents) Mix*. This template provides an effect which is very commonly used in mixing. It utilizes pitch shifting and delay to thicken and spread audio material in stereo. The positive-going pitch is panned to one side and the negative-going pitch is panned to the other side. Since the *Mix* slider is set to a mix between the dry and wet signal, this effect can best be used as an Insert on an individual audio track. Optimal applications include guitars and vocals.
- *Thickening (±11 cents) Full Wet*. This template provides the same thickening effect as above but is set to 100% wet. For this reason, it is best used as a shared resource in a standard send and return arrangement. When mixing with this effect, it is useful to put the original, unprocessed signal in the center of the stereo field with the stereo pitch processing to either side. The positive-going pitch is panned to one side and the negative-going pitch is panned to the other side.
- *Bass Thicken (±11 cents) Mix*. This template is provided to illustrate an optimal setting of the *Minimum Pitch* slider (28 Hz) when processing a low-frequency instrument such as a bass guitar with a minimum of artifacts. The template provides a good thickening and spreading effect with a wide stereo field.
- *Bass Oct Dbl. Mix*. This template provides a simple octave-doubling preset for transposing bass guitar or similar low-frequency audio material. This preset is set up for a Wet/Dry mix balance of 50% which can be varied to give more weight to either the original pitch or octave-doubled effect portion. Again, this Template illustrates an optimal setting of the *Minimum Pitch* slider for processing a low frequency material such as a bass guitar with a minimum of artifacts.

- *Falling Feedback Pitch Wet*. This template provides an interesting special effect which illustrates how you can use pitch change with feedback and delay to achieve an effect where pitch drops and changes. As you will notice in this example, when delay and feedback are used together, the delay will continue to change pitch to achieve a climbing or falling effect.
- *Gtr. low warble (-1 semi)*. This is template illustrates a simple semitone pitch transposition (100% wet). It also provides *Crossfade*, *Minimum Pitch* and *Maximum Pitch* settings designed to provide optimal results for pitch transposition of guitar, with few or no artifacts. As noted previously, the *Crossfade* parameter's *Auto* setting has a relatively long crossfade value which can adversely affect audio with sharp percussive attacks (as in the case of a guitar). Experiment with varying the setting of the *Crossfade* slider to see how it affects the audibility of artifacts in the transposed signal. We recommend that you try *Crossfade* settings other than *Auto* for percussion to find what works best for your particular program material.

### **To load and use one of the DPP-1 effect templates included on disk:**

- Make sure you have copied the DPP-1 effect templates from your DPP-1 *Installer* disk to your hard disk.
- Make sure the Inserts/Sends Editor is open.
- In the Inserts Editor, click the *Track Selector* pop-up and choose the track that you wish to import the Plug-In parameters into.
- When the desired track appears in the Inserts Editor, click the *Insert Selector* pop-up and choose *Insert A*, *B*, *C*, *D*, or *E* from the pop-up menu depending on which of these you wish to import the parameters into.
- From the Edit menu, choose *Import Settings*. The *Import Settings* dialog appears.
- In this file dialog locate the desired settings file and click *Open*. Pro Tools loads the previously saved effect parameters into the Effects/Sends Editor where they are applied to the currently selected track.
- Begin audio playback and listen to the effect.

## Customizing DPP-1 Effects

Though your DPP-1 disk includes several templates with settings for useful pitch processing effects, you will still often wish to customize a particular effect to your liking. This is simple to do by adjusting the DPP-1 parameters until you find an effect that you are pleased with. Experimentation and creative use of DPP-1 will allow you to apply many exciting effects to your mixes in the Pro Tools/TDM environment.

---

## Suggestions for Using DPP-1 in a TDM Mixing Environment

Because of the great flexibility of the TDM mixing environment, there are potentially many ways to route and use DPP-1 in a Session. This section provides a few suggestions for some efficient DPP-1 TDM setups. Because the exact steps that you take to use DPP-1/TDM's capabilities will differ depending on the nature of your Session and your specific Pro Tools mixer setup, the example that follows is somewhat generalized. For simplicity's sake, the example uses very simple routings—Bus 1-2 and Outputs 1-2. In reality, the bus assignments that you use may differ depending on your Session.

### Using a Master Fader as a Bus Master to Control the Level of Bussed Signals Sent to DPP-1

As a general rule, it's good practice to set up a Master Fader to give you automatable bus master level control to the input of DPP-1. This will also help prevent clipping of DPP-1's Input by allowing you to visually monitor the meter(s) on the Master Fader tracks to watch for clipping.

### Using a DPP-1's Mono In/Stereo Out Mode to Process One or More Mono Signals and Produce a Stereo Output.

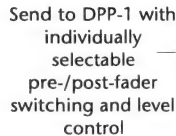
It is often useful from a production standpoint to process one or more mono signals and produce a stereo output. You can do this by using DPP-1's Mono In/Stereo Out mode. It is also sometimes efficient to use DPP-1 as a "shared resource" on more than one track. This technique allows you to apply DPP-1 to multiple tracks within a submix to make efficient use of DSP, rather than applying it to each track separately. This way you have individual control over level and pre-/post-fader switching on a track-by-track basis.

The following example illustrates both of the above suggestions. You can refer to the illustration that follows these instructions to see what this setup looks like.

**To set up a Mono In/Stereo Out DPP-1 in a Send/Return Arrangement with a Master Fader to control send level:**

- From the Setups menu, choose *I/O Labels*. In the dialog that appears, rename Bus 1 to “*DPPSend*.” (This will function as our DPP-1 Send Bus). Click OK to close this dialog.
- On the track(s) that you want to send to DPP-1, click the *Sends* pop-up and select *DPPSend* (the name we have just given to Bus 1).
- Create an Auxiliary Input by choosing *New Auxiliary Inputs* from the File menu. In the dialog that appears, select *Mono*.
- On the Auxiliary Input track, click the *Inserts* pop-up.
- Select *DPP-1 Mono In/Stereo Out*. This changes the Auxiliary Input track to a mono in/stereo out track with two pan sliders. (The Inserts/Sends Editor now appears, but you can set the parameters of DPP-1 later.)
- Set the Input of the Auxiliary Input track to *DPPSend* (the name we have given to Bus 1).
- Set the Output of the Auxiliary Input track to the main mix outputs (typically, Audio Interface outputs 1-2).
- From the File menu, choose *New Master Faders* and in the dialog that appears, choose *Mono* input. Name this track *DPP M Snd*. (This allows us to control the overall Send level to DPP-1.) *Master Faders do not require any DSP power to create. Use them freely.*
- Set the output of the Master Fader *DPPSend* (Bus 1). It will now control the overall Send level to DPP-1.
- Remember, you can move the location of Pro Tools tracks in order to group functional elements together by clicking on a track name button and dragging the track with the mouse. In this case it may be useful to move the Master Bus level Fader to the left of the DPP-1 return.

This setup now allows you to use DPP-1 as a shared resource in Mono In/ Stereo Out mode. It also allows you to use a Master Fader to control the level of signals sent to DPP-1.

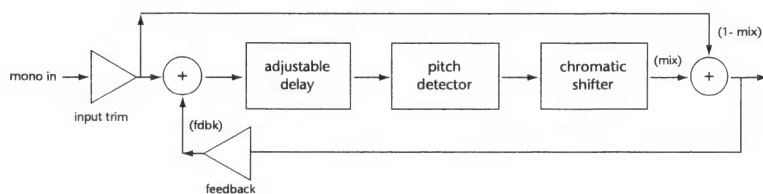


Using DPP-1 as a "shared resource" as an Insert on an Auxiliary Return track ("DPP-1 Rtn").  
This track carries the bussed signals from the two tracks, "Gtr 1" and "Gtr 2".  
The track "DPP M Snd" is a Bus Master Fader which controls the Send level of the two tracks being sent to DPP-1. It also supplies "bus master" metering.

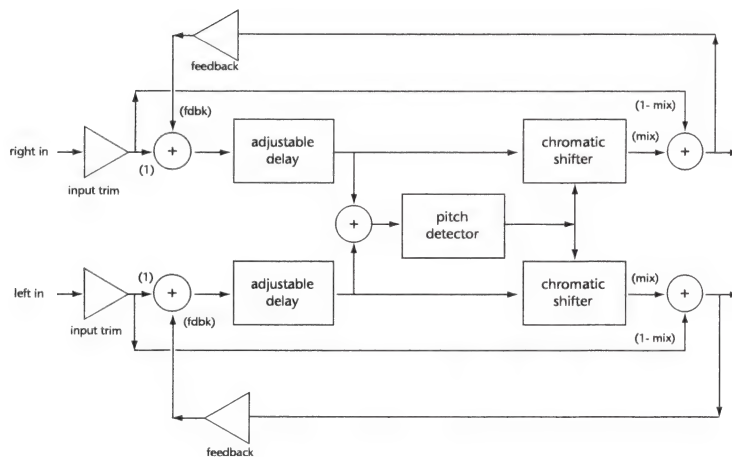
This concludes your DPP-1 User's Guide. You should now have a good fundamental knowledge of how to use and apply DPP-1 in your Pro Tools/TDM mixing environment. By putting DPP-1 to practical use in Pro Tools Sessions you will find many creative uses for its powerful processing capabilities.

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## DPP-1 Pitch Processor Signal Flow Block Diagram



**Mono**



**Stereo**

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## MAIN FEATURES

- 4 octave stereo pitch processing with delay—intuitive user interface utilizing musical staff notes, octave switches and semitone/cent adjustment supplies up to 4 octaves of stereo pitch change with up to 125 ms. of delay per channel
- High-quality 24-bit pitch change/delay processing for Pro Tools III/TDM systems—everything you need in a basic pitch processor far less than a stand-alone unit of similar quality
- Operates as standard “Plug-In” within the Pro Tools III/TDM environment—stay in the digital domain with an all-digital signal/mix path
- Easily updateable—no hardware upgrades necessary for increased features/functionality
- Easily expandable—DSP power available on demand from the DSP Farm gives you multiple DPP-1's. You get multiple pitch processors for the price of one software Plug-In.

## SYSTEM REQUIREMENTS

- Pro Tools III Core System or TDM-equipped Pro Tools 442 (Pro Tools I-series) Core System
- Each DPP-1 requires a single DSP Farm chip for operation